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10/083,146	02/27/2002	Satoshi Ejima	112068	6604

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EXAMINER	
DANIELS, ANTHONY J	
ART UNIT	**PAPER NUMBER**
2622	

DATE MAILED: 03/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/083,146	EJIMA, SATOSHI	
	Examiner	Art Unit	
	Anthony J. Daniels	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 December 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *22-25* is/are allowed.

6)☒ Claim(s) *1,3-5,8-13,15,18-21 and 26-29* is/are rejected.

7)☒ Claim(s) *6,7,14,16,30* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment, filed 12/22/2005, has been entered and made of record. Claims 1 and 3-30 are pending in the application.

Response to Arguments

2. Applicant's arguments with respect to all claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1,3,5,10-12,17,20,21,26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konishi et al. (US # 5,420,635) in view of Sugahara et al. (US # 6,778,210).

As to claim **1**, Konishi et al. teaches a digital camera (Figure 5) comprising: an image-capturing device (Figure 5, CCD "14") that captures a subject image (Figure 1); an exposure control device (Figure 5, exposure control "10") that implements control on a length of exposure time to elapse while capturing the subject image at said image-capturing device (Col. 15, Lines 13-19); an image generating device that generates a plurality of sets of image data through successive image-capturing operations performed over varying exposure times by controlling

said image-capturing device and said exposure control device, the exposure times being different from one another (Col. 29, Lines 38-46), wherein: said image generating device successively generates first image data by capturing an image over a first exposure time and second image data by capturing an image over a second exposure time set longer than the first exposure time (Col. 29, Lines 38-46; Figure 3a, 3b), a high-frequency component of a spatial frequency contained in the second image data being less than a high-frequency component of a spatial frequency contained in the first image data (Figure 4). The claim differs from Konishi in that it further requires that said image processing device generates third image data in which the blur has been corrected by correcting at least the high-frequency component of the spatial frequency contained in the second image data based upon the first image data and the second image data generated by said image generating device.

In the same field of endeavor, Sugahara et al. teaches detecting and correcting the blur by compensating for relative motion between frames by image shifting (Figure 1, blur detecting section "8-1" and blur correcting section "8-2"; Col. 2, Lines 15-30; Col. 7, Lines 58-67; Col. 8, Lines 1-3). In light of the teaching of Sugahara et al., it would have been obvious to one of ordinary skill in the art to include the blur detecting and correcting processes in the successive image capture of Konishi, because an artisan of ordinary skill in the art would recognize that these processes would prevent deterioration in the image forming performance of Konishi et al. (see Sugahara et al., Col. 2, Lines 1-10).

As to claim **3**, Konishi et al., as modified by Sugahara et al., teaches a digital camera according to claim 1, wherein: said exposure control device implements control so that the first

exposure time is set equal to or less than approximately 1/2 of the second exposure time (see Konishi et al., Col. 29, Lines 38-46).

As to claim **5**, Konishi et al., as modified by Sugahara et al., teaches a digital camera according to claim 1. The claim differs from Konishi et al., as modified by Sugahara et al. in that it further requires a display control device that allows the second image data to be displayed at a display unit and disallows display of the first image data at the display unit.

In the same field of endeavor, Sugahara et al. teaches an LCD to display images (Figure 1, LCD "11"; *{It is inherent that when one of a plurality of image data is displayed on an LCD or something of the sort, another of the plurality of image data is not allowed for display.}*). In light of the teaching of Konishi et al., as modified by Sugahara et al., it would have been obvious to one of ordinary skill in the art to include the LCD of Sugahara et al. in the system of Konishi et al., because an artisan of ordinary skill in the art would recognize that a user would be able to review captured images.

As to claim **10**, Konishi et al., as modified by Sugahara et al., teaches a digital camera according to claim 1, further comprising: a flash control device that controls a flash light emitting unit to illuminate a subject at light emission quantities in proportion to varying exposure times when generating a plurality of sets of image data over the varying exposure times at said image generating device (Figure 5, strobe device "28"; Col. 19, Lines 54-65).

As to claim **11**, Konishi et al., as modified by Sugahara et al., teaches a digital camera according to claim 1, further comprising: a blur detection device that detects a blur manifesting in image data based upon a plurality of sets of image data generated at said image generating device (see Sugahara, blur detecting device "8-1"; Col. 8, Lines 32-38), wherein: said image

processing device records one set of image data among said plurality of sets of image data into a recording medium without implementing image processing for blur correction if the detection results obtained at said blur detection device indicate that none of the plurality of sets of image data manifest a blur, and executes image processing for blur correction if a blur has occurred in one of the plurality of sets of image data and records image data obtained by correcting the blur into the recording medium (see Sugahara et al., Col. 5, Lines 10-15; see Konishi et al., still video camera of Figure 5, frame memories "21", "22").

As to claim **12**, the limitations of claim 12 can be found in claim 11. Therefore, claim 12 is analyzed and rejected as previously discussed with respect to claim 11.

As to claim **20**, Konishi et al., as modified by Sugahara et al., teaches a digital camera according to claim 1, further comprising: a detection unit that detects a photographing condition of said digital camera which manifests a blur in image data generated by said image generating device (see Sugahara et al., Figure 1, blur detecting section "8-1"), wherein: said image processing device executes image processing for blur correction only when said detection unit detects the photographing condition of said digital camera which manifests a blur in the image data (see Sugahara et al., Col. 5, Lines 14,15, "...when an image blur has been detected;").

As to claim **21**, the limitations of claim 21 can be found in claim 1. Therefore, claim 21 is analyzed and rejected as previously discussed with respect to claim 1.

As to claim **26**, Konishi, as modified by Sugahara et al., teaches a digital camera according to claim 1, further comprising: a first calculation device that obtains information relating to the spatial frequency of the first image data (see Sugahara et al., Figure 1, blur correcting section "8-2"; Col. 7, Lines 58-67; Col. 8, Lines 1-3; motion vectors are information

processing device records one set of image data among said plurality of sets of image data into a recording medium without implementing image processing for blur correction if the detection results obtained at said blur detection device indicate that none of the plurality of sets of image data manifest a blur, and executes image processing for blur correction if a blur has occurred in one of the plurality of sets of image data and records image data obtained by correcting the blur into the recording medium (see Sugahara et al., Col. 5, Lines 10-15; see Konishi et al., still video camera of Figure 5, frame memories "21", "22").

As to claim **12**, the limitations of claim 12 can be found in claim 11. Therefore, claim 12 is analyzed and rejected as previously discussed with respect to claim 11.

As to claim **17**, the limitations of claim 17 can be found in claim 3 Therefore, claim 17 is analyzed and rejected as previously discussed with respect to claim 3.

As to claim **20**, Konishi et al., as modified by Sugahara et al., teaches a digital camera according to claim 1, further comprising: a detection unit that detects a photographing condition of said digital camera which manifests a blur in image data generated by said image generating device (see Sugahara et al., Figure 1, blur detecting section "8-1"), wherein: said image processing device executes image processing for blur correction only when said detection unit detects the photographing condition of said digital camera which manifests a blur in the image data (see Sugahara et al., Col. 5, Lines 14,15, "...when an image blur has been detected;").

As to claim **21**, the limitations of claim 21 can be found in claim 1. Therefore, claim 21 is analyzed and rejected as previously discussed with respect to claim 1.

As to claim **26**, Konishi, as modified by Sugahara et al., teaches a digital camera according to claim 1, further comprising: a first calculation device that obtains information

relating to the spatial frequency of the first image data (see Sugahara et al., Figure 1, blur correcting section "8-2"; Col. 7, Lines 58-67; Col. 8, Lines 1-3; motion vectors are information relating to spatial frequency); and a second calculation device that obtains information relating to the spatial frequency of the second image data (see Sugahara et al., Figure 1, blur correcting section "8-2"; Col. 7, Lines 58-67; Col. 8, Lines 1-3; motion vectors are information relating to spatial frequency), wherein: the image processing device generates the third image data based on the information relating to the spatial frequency of the first image data and the information relating to the spatial frequency of the second image data (see Sugahara et al., Col. 8, Lines 1-3; "...Sout (I,j)...").

As to claim **27**, Konishi et al., as modified by Sugahara et al., teaches a digital camera according to claim 26, wherein; the first calculation device calculates the information relating to the spatial frequency in each of pixel data blocks each containing pixel data corresponding to a predetermined number of pixels in the first image data, and the second calculation device calculates the information relating to the spatial frequency in each of pixel data blocks each containing pixel data corresponding to a predetermined number of pixels in the second image data (*The pixel data blocks are interpreted as 3x3 blocks in the image. Motion vectors exist for all pixels in the block.*).

As to claim **28**, Konishi et al., as modified by Sugahara et al., teaches A digital camera according to claim 26, wherein: the first calculation device calculates amplitudes and phases of a plurality of spatial frequency components contained in the first image data as the information relating to the spatial frequency, and the second calculation device calculates amplitudes and

phases of a plurality of spatial frequency components contained in the second image data as the information relating to the spatial frequency (see Konishi et al., Figure 4).

As to claim **29**, Konishi et al., as modified by Sugahara et al., teaches a digital camera according to claim 26, wherein; the image processing device generates the third image data by correcting an amplitude and a phase of a spatial frequency component of the second image data. (*When blur is corrected, the amplitude of a high-frequency component of the image is corrected. Furthermore, the shifting of the images in Sugahara et al. so to coincide is a phase correction*).

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Konishi et al. (US # 5,420,635) in view of Sugahara et al. (US # 6,778,210) and further in view of Allen et al. (US # 5,430,480).

As to claim **4**, Konishi et al., as modified by Sugahara et al., teaches a digital camera according to claim 1, further comprising: a recording device that records the first image data and the second image data (see Figure 5, TO MEMORY CARD). The claim differs from Sugahara et al. in that it further requires that an image compression device compresses first image data at a first compression rate and compresses second image data at a second compression rate higher than the first compression rate, and the recording device records the compressed images.

In the same field of endeavor, Allen et al. teaches the compression of two image data frames (see Col. 4, Lines 37,38) and teaches a higher compression rate of simpler images (i.e. images with low frequency detail) (see Col. 1, Lines 55-58; *{On page 22, Lines 22-25 of the specification, applicant shows that an image with less high frequency detail is compressed at a higher rate.}*). It would have been obvious to one of ordinary skill in the art at the time the

invention was made to compress the image data of Konishi et al., as modified by Sugahara et al., with low frequency at a higher rate than the image data of Konishi et al., as modified by Sugahara et al., with higher frequency detail, because an artisan of ordinary skill in the art would recognize that compressing the data as much as possible will save the most space in memory.

5. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konishi et al. (US # 5,420,635) in view of Sugahara et al. (US # 6,778,210) and further in view of Tamura et al. (US 6,040,860).

As to claim **8**, Konishi et al., as modified by Sugahara et al., teaches a digital camera of claim 1. The claim differs from Konishi et al., as modified by Sugahara et al., in that it further requires that said image processing device implements gradation correction processing on the third image data if the third image data that have been generated contain brightness data indicating a value equal to or higher than a predetermined value.

In the same field of endeavor, Tamura et al. teaches comparing an image signal with a reference value and from this determining a degree of gradation which needs to be applied (see Col. 5, Lines 50-67, Col. 6, Lines 1-3). In light of the teaching of Tamura et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply gradation correction to the image of Konishi et al., as modified by Sugahara et al., because an artisan of ordinary skill in the art would have recognized that the imaging apparatus could output an image with rich gradation across the entire gradation range without gradation loss or conspicuous noise from subjects imaged in a lighting condition ranging from backlit to normal lighting (see Tamura et al., Col. 6, Lines 38-42).

As to claim **9**, Konishi et al., as modified by Sugahara et al., teaches a digital camera according to claim 1. The claim differs from Konishi et al., as modified by Sugahara et al., in that it further requires that said image processing device implements processing the third image data to increase a quantifying bit number thereof if the third image data having been quantized at a predetermined quantifying bit number contain brightness data indicating a value equal to or higher than a predetermined value.

In the same field of endeavor, Tamura et al. teaches different quantized data for difference types of pixel information (see Col. 10, Lines 63-67; Col. 1, Lines 1-5) which are separated by threshold values (see Figure 4). In light of the teaching of Tamura et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to give different quantized values to groups of pixel data separated by a threshold value in the image data values of Konishi et al., as modified by Sugahara et al., because an artisan of ordinary skill in the art would recognize that this would prevent pixels with different analog values from having the same digital value.

6. Claims 13,15,18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konishi et al. (US # 5,420,635) in view of Sugahara et al. (US # 6,778,210) and further in view of Mathew et al. (US # 6,628,711).

As to claim **13**, Konishi et al., as modified by Sugahara et al., teaches a digital camera according to claim 1. The claim differs from Konishi et al., as modified by Sugahara et al., in that it further requires a panning direction setting unit through which a panning direction along which the second image data are captured is set, wherein: said image processing device changes

details of image processing implemented to generate the third image data in correspondence to the panning direction set at said panning direction setting unit.

In the same field of endeavor, Mathew et al. teaches a motion vector map which determines the motion of the camera due to panning (see Col. 3, Lines 33-37) and compensates for such (see Figure 1, jitter estimation unit "14"; Col. 3, Lines 43-45). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the jitter estimation means to compensate for the effect of panning in the system of Sugahara et al., as modified by Konishi et al., as modified by Sugahara et al., because one ordinary skill in the art would recognize that eliminating the effects of panning would allow a user to obtain motion blur-free dynamic images.

As to claim **15**, the limitations of claim 15 can be found in claim 13. Therefore, claim 15 is analyzed and rejected as previously discussed with respect to claim 13.

As to claims **18** and **19**, the limitations for claims 18 and 19 can be found in claim 3. Therefore, claims 18 and 19 are analyzed and rejected as previously discussed with respect to claim 3.

Allowable Subject Matter

7. Claims 22-25 are allowed.

The reasons for allowance can be found in the previous office action.

8. Claims 6,7,14,16 and 30 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The reasons for indicating allowable subject matter for claims **7,14** and **16** can be found in the previous office action.

The following is a statement of reasons for the indication of allowable subject matter: As to claims **6** and **30**, the prior art of record does not teach or fairly suggest generating third image data from by correcting an amplitude and a phase of a spatial frequency component of the second image data based upon an amplitude ratio and a phase difference of the spatial frequency component of the first image data and the spatial frequency component of the second image data in combination with the rest of claim 1 and 26.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J. Daniels whose telephone number is (571) 272-7362. The examiner can normally be reached on 8:00 A.M. - 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AD
3/4/2006

NGOC-YEN VU
SUPERVISORY PATENT EXAMINER